



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/562,362

12/27/2005

Kazuyuki Mikubo

19453

6180

23389 7590 03/10/2009
SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

03/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,362	Applicant(s) MIKUBO ET AL.	
	Examiner Tho v. Duong	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/27/05; 3/24/06; 9/19/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-5 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 12, the claimed subject matter of "said first passage has a width smaller than a width of said passage" renders the scope of the claim indefinite since it is not clear what applicant compares the width of the first passage to.

Claim 2 recites the limitation "said connecting member" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites the limitation "said passage" in line 3 and 5. There is insufficient antecedent basis for this limitation in the claim. It is not clear which passage (first or second passage) that the applicant refers to.

Claim 4 recites the limitation "said micro-channel structure" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "said passage in said area" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "said passage" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Specification

Art Unit: 3744

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the claimed subject matter of “said first passage has a width smaller than a width of said passage” and “said first passage has a depth larger than a depth of said second passage” are not disclosed in the specification.

Claims 2-5 and 12 are further rejected as can be best understood by the examiner in which the "said passage" is "said second passage"; the connecting member is the coupling member; and claim 4 depends on claim 3, to provide a proper antecedent basis for “said micro-channel structure”

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 6 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 2003/0189815). Lee discloses (figures 27-28) a cooling device comprising a first cooling panel wherein a first passage through which refrigerant circulates is formed; a second cooling panel wherein a second passage through which the refrigerant circulates is formed; the second cooling panel being disposed to oppose the first cooling panel; a circulation pump (wick) for

Art Unit: 3744

circulating the refrigerant through the first passage and the second passage to diffuse heat transferred to the cooling panel and the second panel; the first cooling panel and the second cooling panel sandwiched there between an electronic circuit substrate (14); a coupling member (bridge 161) bearing the first cooling panel and the second panel for opening and closing with respect to each other; and the connecting member (161) has a flexibility. Regarding claim 3, Lee discloses (figures 16-17) the first panel includes a micro-channel structure (micro-heat pipe 93) within the passage (receiving grooves 98,99); the micro-channel structure (93) including a plurality of narrow passages (flow channel within the heat pipe) having a width smaller than a width of the passage (98,99). Regarding claim 4, Lee discloses (figures 20 and 27) that the first cooling panel includes an area in which an air-cooled fin is formed on a surface; the area being disposed downstream of the micro-channel structure (micro-heat pipe) and a fan (171) is disposed corresponding to the air-cooled fin. Regarding claim 5, Lee discloses (figures 18-20) that the passage is wobbled. Regarding claim 10, the first cooling panel is formed by bonding together a top heat radiation panel (94) and a bottom heat radiation panel (96) and a groove (99) is formed in the panel. Regarding claim 11, Lee discloses (figures 2-3) the first cooling panel (18) has an area smaller than an area of the second cooling panel (20). Regarding claim 12, Lee discloses (figure 2) that the first passage (27) has a width smaller than a width of the passage (28) (width is interpreted to be the insertion direction of the heat pipe). Regarding claim 13, the first panel (20) is considered to be the first panel and the first passage (28) has a depth larger than a depth of the second passage (27) (depth is interpreted to be the insertion direction of the heat pipe).

Claim Rejections - 35 USC § 103

Art Unit: 3744

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Beam (US 4,674,565). Lee substantially discloses all of applicant claimed invention as discussed above except for the limitation that the pump is fixed onto a surface of the second cooling panel and a reservoir communicated with the second passage and disposed on a surface and within the second cooling panel. Regarding claim 7, Lee discloses (figure 2) the panel (20) includes a passage (heat pipe 20). Therefore, the inner surface of the heat pipe is also considered to be a surface of the panel. It is well known in the heat pipe art that a wick (pump) disposed onto an inner surface of the heat pipe. Beam discloses a heat pipe (20) that has a pump (wick 22) is fixed onto an inner surface of the heat pipe and a reservoir (22a) disposed on an inner surface and well within the heat pipe for a purpose of circulating fluid within the heat pipe and preventing dry out of the heat pipe during high thermal energy transfer condition. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Beam's teaching in Lee's device for a purpose of circulating fluid within the heat pipe and preventing dry out of the heat pipe during high thermal energy transfer condition.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 3744

Attey et al. (US 5,653,111) discloses a thermoelectric heat exchanger.

Dussinger et al. (US 6,302,192) discloses an integrated circuit heat pipe.

Ohkouchi (US 2003/0090873A1) discloses a coolant cooled type semiconductor.

Koide et al. (US 6,016,251) discloses a printed circuit board and cooling system.

Kikuchi et al. (US 4,712,158) discloses a cooling system for electronic component.

Herren (US 4,420,739) discloses a liquid cooled electrical assembly.

Prasher et al. (US 6,934,154) discloses a microchannel heat exchangers and spreader.

Batchelor et al (US 6,619,044) discloses a heat exchanger for an electronic heat pump.

Wegeng et al. (US 5,611,214) discloses a microcomponent sheet.

Mikubo et al. (US 7,483,261) discloses a cooling device for electronic device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tho v Duong/
Primary Examiner, Art Unit 3744